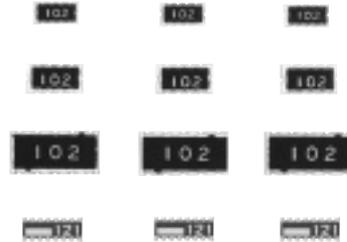


Chip Resistor Networks

Type: **EXBD:1206**
EXBE:1608
EXBA:2512
EXBQ:1506

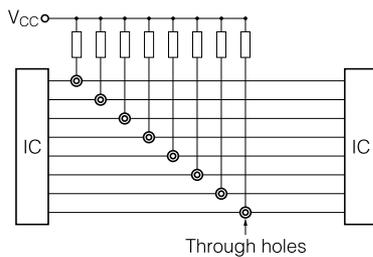


■ Features

- High density placing for digital signal circuits
 - Bussed 8 or 15 resistors for pull up/down circuits
 - EXBD: 3.2 mm × 1.6 mm × 0.55 mm, 0.635 mm pitch
 - EXBE: 4.0 mm × 2.1 mm × 0.55 mm, 0.8 mm pitch
 - EXBA: 6.4 mm × 3.1 mm × 0.55 mm, 1.27 mm pitch
 - EXBQ: 3.8 mm × 1.6 mm × 0.45 mm, 0.5 mm pitch
 - Available direct placing on the bus line by means of half pitch spacing without through-holes on PWB ("High density placing" is shown below)
- High speed mounting using conventional placing machine
- Approved under the ISO 9001 system

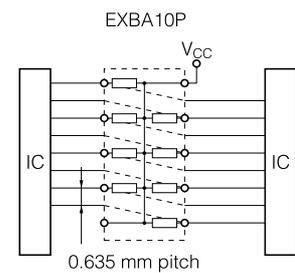
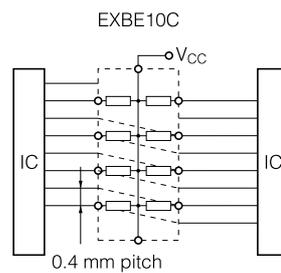
<High density placing>

Pull up resistors

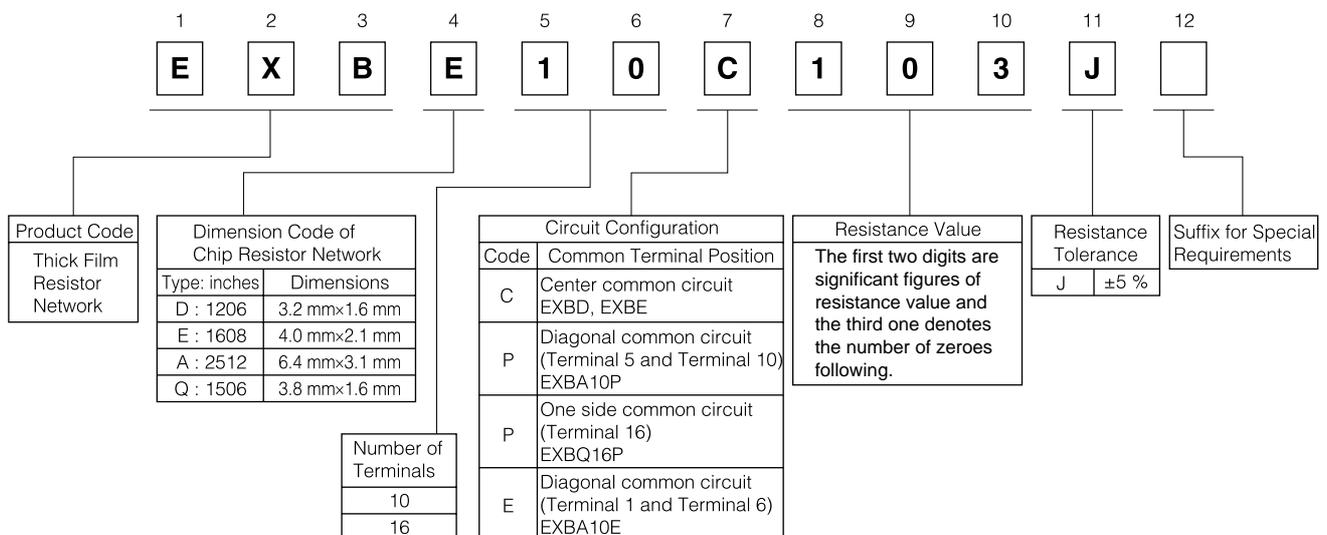


No through hole

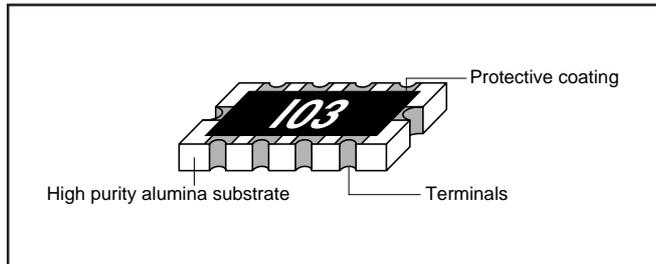
Direct placement on the bus line



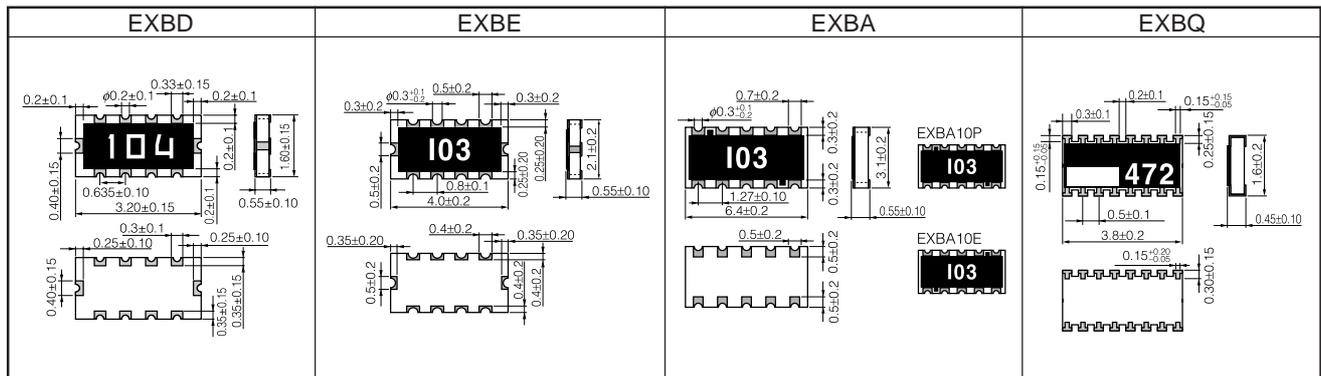
■ Explanation of Part Numbers



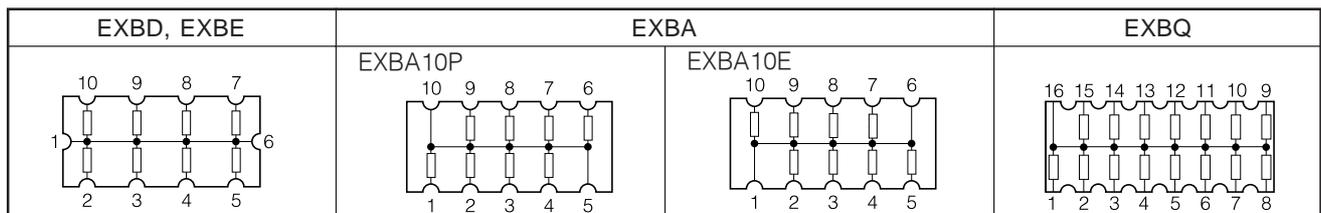
Construction (Example : EXBD)



Dimensions in mm (not to scale)



Circuit Configuration



Ratings

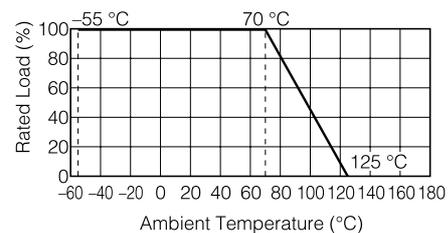
Item	Specifications			
	EXBD	EXBE	EXBA	EXBQ
Series				
Resistance Range	47 Ω to 1 MΩ (E12 series)			100 Ω to 470 kΩ (E6 series)
Resistance Tolerance	±5 %			
Number of Terminals	10 terminals			16 terminals
Number of Resistors	8 resistors			15 resistors
Power Rating at 70 °C	0.05 W/element	0.063 W/element		0.025 W/element
Limiting Element Voltage (Maximum Rated Continuous Working Voltage) ⁽¹⁾	25 V		50 V	25 V
Maximum Overload Voltage ⁽²⁾	50 V		100 V	50 V
T.C.R.	±200 × 10 ⁻⁶ /°C (ppm/°C)			
Category Temperature Range (Operating Temperature Range)	-55 °C to +125 °C			

(1) Rated Continuous Working Voltage (RCWV) should be determined from $RCWV = \sqrt{\text{Power Rating} \times \text{Resistance Value}}$, or Limiting Element Voltage (maximum RCWV) listed above, whichever is less.

(2) Overload (Short-time Overload) Test Voltage (SOTV) should be determined from $SOTV = 2.5 \times RCWV$ or Maximum Overload Voltage listed above whichever is less.

Power Derating Curve

For resistors operating in ambient temperature above 70 °C, power rating should be derated in accordance with the right figure.



Recommended Land Pattern (mm)

	EXBD	EXBE
For popular pattern	<p>Pitch 0.635 mm</p>	<p>Pitch 0.8 mm</p>
For high density pattern*		<p>Pitch 0.4 mm...Through-hole less</p>
For popular pattern	<p>Pitch 1.27 mm</p>	<p>Pitch 0.5 mm</p>
For high density pattern*	<p>Pitch 0.635 mm...Through-hole less</p> <p>EXBA10P EXBA10E</p>	

* When designing high density land patterns, examine the reliability of isolation among the lines and adopt the chip resistor networks.

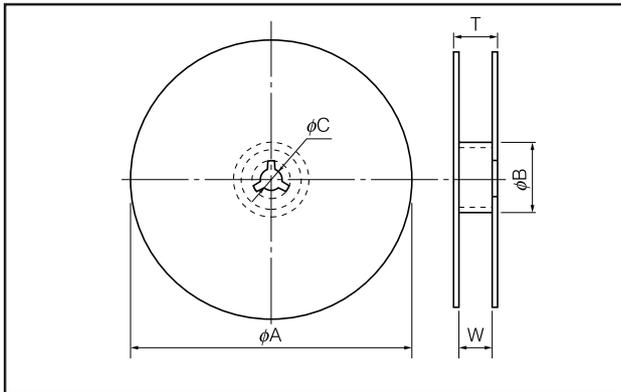
■ Packaging Specifications

- Standard Quantity

Type (inches)	Thickness (mm)	Weight (mg)	Punched (Paper) Taping	Embossed Taping
EXBD (1206)	0.55 ± 0.10	10	5000 pcs./reel	—
EXBE (1608)		16	—	4000 pcs./reel
EXBA (2512)		40		
EXBQ (1506)	0.45 ± 0.10	9	5000 pcs./reel	—

■ Taping Dimensions

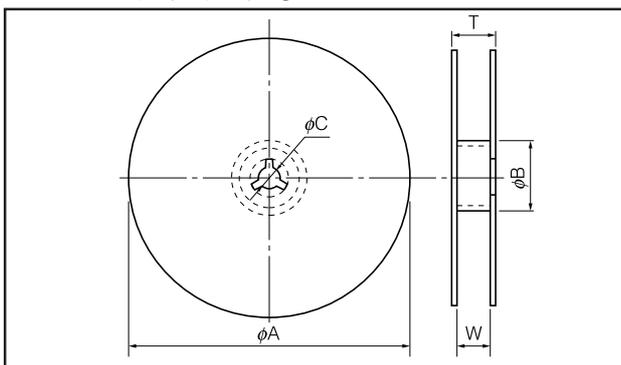
- Embossed Taping Reel



	Type	φA	φB	φC
Dimensions (mm)	EXBE	180.0 ⁰ _{-3.0}	60 min.	13.0±1.0
	EXBA			

	Type	W	T
Dimensions (mm)	EXBE	13.0±1.0	15.4±2.0
	EXBA		

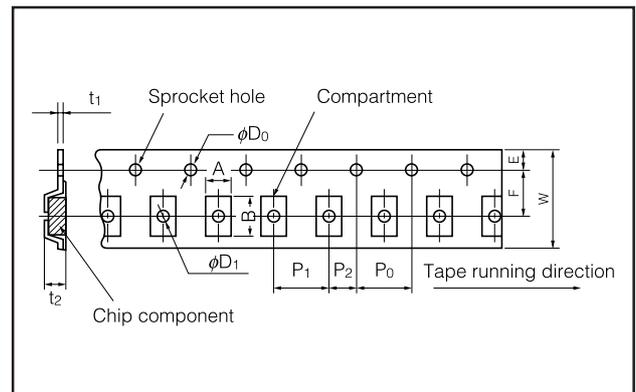
- Punched (Paper) Taping Reel



	Type	φA	φB	φC
Dimensions (mm)	EXBD	180.0 ⁰ _{-3.0}	60 min.	13±1.0
	EXBQ			

	Type	W	T
Dimensions (mm)	EXBD	9.0±1.0	11.4±2.0
	EXBQ		

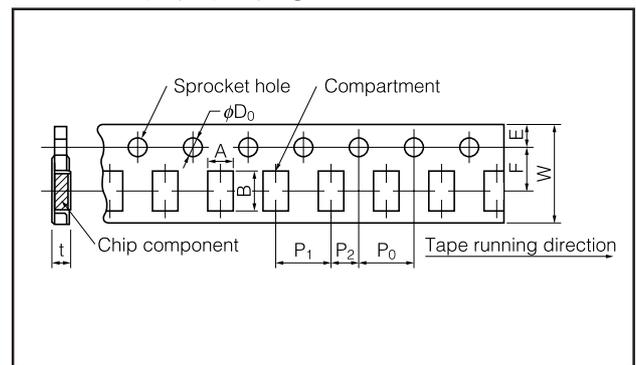
- Embossed Taping



	Type	A	B	W	F	E	P ₀
Dimensions (mm)	EXBE	2.50±0.20	4.40±0.20	12.00±0.30	5.50±0.10	1.75±0.20	4.00±0.10
	EXBA	3.50±0.20	6.80±0.20				

	Type	P ₁	P ₂	φD ₀	t ₁	t ₂	φD ₁
Dimensions (mm)	EXBE	4.00±0.10	2.00±0.10	1.50 ^{+0.10} ₀	0.25±0.05	1.10±0.20	1.50 ^{+0.10} ₀
	EXBA						

- Punched (Paper) Taping



	Type	A	B	W	F	E	P ₀
Dimensions (mm)	EXBD	2.00±0.20	3.60±0.20	8.00±0.20	3.50±0.10	1.75±0.10	4.00±0.10
	EXBQ	1.90±0.20	4.10±0.20				

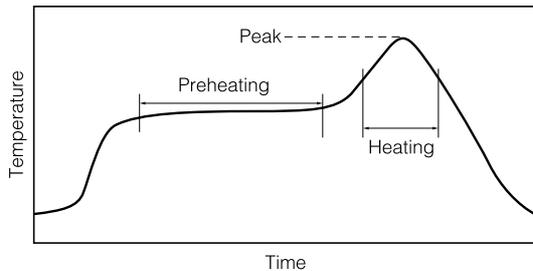
	Type	P ₁	P ₂	φD ₀	t
Dimensions (mm)	EXBD	4.00±0.10	2.00±0.10	1.50 ^{+0.10} ₀	0.84±0.10
	EXBQ				0.64±0.05

⚠ Safety Precautions

1. Soldering

Recommendations for soldering method.

- Recommended soldering conditions for reflow
 - Reflow soldering should be a maximum of two times
 - Please contact us for additional information when used in conditions other than those specified.
 - Please measure the temperature of the terminations and study every type of the printed circuit board for solderability, before actual use.



For solder (Example : Sn/Pb)

	Temperature	Time
Preheating	140 °C to 160 °C	60 s to 120 s
Main heating	Above 200 °C	30 s to 40 s
Peak	235 ± 5 °C	max. 10 s

For lead-free solder (Example : Sn/Ag/Cu)

	Temperature	Time
Preheating	150 °C to 180 °C	60 s to 120 s
Main heating	Above 230 °C	30 s to 40 s
Peak	max. 260 °C	max. 10 s

- Flow soldering
 - Consult us for using flow soldering to EXBA series. Flow soldering is not recommended for Chip Resistor Networks: EXBD/EXBE/EXBQ, because solder bridge may occur due to the 0.635 mm/0.8 mm/0.5 mm pitch of EXBD/EXBE/EXBQ series.
 - Iron soldering
 - ① Solder at 350 °C max. and 3 seconds max. with the soldering iron tip.
 - ② The soldering iron tip shall not touch the protective coating of the part.
 - Use rosin type flux. Do not use high-activity flux (the chlorine content is 0.2 wt% or more).
 - Allow enough preheating so that the difference of soldering temperature and surface temperature of the part is 100 °C or less. This temperature difference should be controlled by immersion into solvent.
 - Avoiding excessive amounts of solder. More solder causes mechanical stress to the part which may result in cracking or impaired characteristics.
2. Cleaning
- Residual flux after board washing may cause solder migration. Carefully monitor board after washing. Carefully select the type and amount of flux to be used when no washing is done. Study type of water-soluble flux and cleaning agent and drying condition when water washing is done. Confirm that cleaning will not affect the device performance.
3. Others
- Take necessary precautions to avoid any abnormal stress caused by bending of the board.
 - Do not use the product in high humidity atmospheres.